

FIG. 1

2/21

LINKER #1 15bp | SV40 ORIGIN=332bp  
GACGTCGCGG CCGCTCTAGG CCTCCAAAAA AGCCTCCTCA CTACTTCTGG AATAGCTCAG 60  
AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAT TAGTCAGCCA TGCATGGGGC 120  
GGAGAATGGG CGGAACCTGGG CGGAGTTAGG GCGGGGATGG GCGGAGTTAG GGGCGGGACT 180  
ATGGTTGCTG ACTAATTGAG ATGCATGCTT TGCATACTTC TGCCTGCTGG GGAGCCTGGG 240  
GACTTTCCAC ACCTGGTTGC TGAATAATTG AGATGCATGC TTTGCATACT TCTGCCTGCT 300  
GGGGAGCCTG GGGACTTTCC ACACCCTAAC TGACACACAT TCCACAGAAT TAATTCCCCT 360  
AGTTATTAAT AGTAATCAAT TACGGGGTCA TTAGTTCATA GCCCATATAT GGAGTTCCGC 420  
GTTACATAAC TTACGGTAAA TGGCCCGCCT GGCTGACCGC CCAACGACCC CCGCCCATTG 480  
CMV PROMOTER-ENHANCER=567bp  
ACGTCAATAA TGACGTATGT TCCCATAGTA ACGCCAATAG GGACTTTCCA TTGACGTCAA 540  
TGGGTGGACT ATTTACGGTA AACTGCCCAC TTGGCAGTAC ATCAAGTGTA TCATATGCCA 600  
AGTACGCCCC CTATTGACGT CAATGACGGT AAATGGCCCC CCTGGCATTG TGCCAGTAC 660  
ATGACCTTAT GGGACTTTCC TACTTGGCAG TACATCTACG TATTAGTCAT CGCTATTACC 720  
ATGGTGATGC GGTTTTGGCA GTACATCAAT GGGCGTGGAT AGCGGTTTGA CTCACGGGGA 780  
TTTCCAAGTC TCCACCCCAT TGACGTCAAT GGGAGTTTGT TTTGGCACCA AAATCAACGG 840  
GACTTTCCAA AATGTCGTAA CAACTCCGCC CCATTGACGC AAATGGGCGG TAGGCGTGTA 900  
CGGTGGGAGG TCTATATAAG CAGAGCTGGG TACGTGAACC GTCAGATCGC CTGGAGACGC 960  
CATCACAGAT CTCTCACCAT GAGGGTCCCC GCTCAGCTCC TGGGGCTCCT GCTGCTCTGG 1020  
CTCCCAGGTG CACGATGTGA TGGTACCAAG GTGGAAATCA AACGTACGGT GGCTGCACCA 1080  
TCTGTCTTCA TCTTCCCGCC ATCTGATGAG CAGTTGAAAT CTGGAAGTGC CTCTGTTGTG 1140  
TGCCTGCTGA ATAACTTCTA TCCAGAGAG GCCAAAGTAC AGTGGAAGGT GGATAACGCC 1200  
HUMAN KAPPA CONSTANT 324bp 107 AMINO ACID & STOP CODON  
CTCCAATCGG GTAACCTCCA GGAGAGTGTC ACAGAGCAGG ACAGCAAGGA CAGCACCTAC 1260  
AGCCTCAGCA GCACCCTGAC GCTGAGCAAA GCAGACTACG AGAAACACAA AGTCTACGCC 1320  
TGCGAAGTCA CCCATCAGGG CCTGAGCTCG CCCGTACAA AGAGCTTCAA CAGGGGAGAG 1380  
STOP  
LIGHT  
CHAIN | Eco RI LINKER #4=85bp  
TGTTCGATTC AGATCCGTTA ACGGTTACCA ACTACCTAGA CTGGATTCTG GACAACATGC 1440  
GGCCGTGATA TCTACGTATG ATCAGCCTCG ACTGTGCCTT CTAGTTGCCA GCCATCTGTT 1500

FIG. 2A

3/21

GTTTGCCCT CCCCCGTGCC TTCCTTGACC CTGGAAGGTG CCACTCCCAC TGTCCTTTCC 1560  
 TAATAAAATG AGGAAATTGC **BGH poly A=231bp** ATCGCATTGT CTGAGTAGGT GTCATTCTAT TCTGGGGGGT 1620  
 GGGGTGGGGC AGGACAGCAA GGGGGAGGAT TGGGAAGACA ATAGCAGGCA TGCTGGGGAT 1680  
 GCGGTGGGCT CTATGGAACC **LINKER #5=15bp** AGCTGGGGCT CGACAGCTAT GCCAAGTACG CCCCTATTG 1740  
 ACGTCAATGA CCGTAAATGG CCCGCCCTGGC ATTATGCCCA GTACATGACC TTATGGGACT 1800  
 TTCCTACTTG GCAGTACATC TACGTATTAG TCATCGCTAT TACCATGGTG ATGCGGTTTT 1860  
 GGCAGTACAT CAATGGGCGT **CMV PROMOTER-ENHANCER=334bp** GGATAGCGGT TTGACTCACG GGGATTCCA AGTCTCCACC 1920  
 CCATTGACGT CAATGGGAGT TTGTTTTGGC ACCAAAATCA ACGGGACTTT CCAAAATGTC 1980  
 GTAACAATC CGCCCCATTG ACGCAAATGG GCGGTAGGCG TGTACGGTGG GAGGTCTATA 2040  
 TAAGCAGAGC **LINKER #6=7bp** TGGGTACGTC CTCACATTCA GTGATCAGCA CTGAACACAG **Sal I** ACCCGTCGAC 2100  
**2051 2 2058 9** **LEADER=51bp** **Mlu I 2151 2 Nhe I**  
 ATGGGTGGA GCCTCATCTT GCTCTTCTT GTCGCTGTG CTACCGGTGT **CGCTAGCACC** 2160  
**START HEAVY CHAIN** **-5 -4 -3 114 115**  
 AAGGGCCCAT CCGTCTTCCC CCTGGCACCC TCCTCCAAGA GCACCTCTGG GGGCACAGCG 2220  
 GCCCTGGGCT GCCTGGTCAA GGACTACTTC CCCGAACCGG TGACGGTGTC GTGGAATCA 2280  
 GGGGCCCTGA CCAGCGGCGT GCACACCTTC CCGGCTGTCC TACAGTCTC AGGACTCTAC 2340  
 TCCCTCAGCA GCGTGGTGAC CGTGCCCTCC AGCAGCTTGG GCACCCAGAC CTACATCTGC 2400  
**993bp=330 AMINO ACID & STOP CODON**  
 AACGTGAATC ACAAGCCCAG CAACACCAAG GTGGACAAGA AAGCAGAGCC CAAATCTTGT 2460  
 GACAAAATC ACACATGCCC ACCGTGCCCA GCACCTGAAC TCCTGGGGGG ACCGTCACTC 2520  
 TTCCTCTTCC CCCCCAAACC CAAGGACACC CTCATGATCT CCCGGACCCC TGAGGTCACA 2580  
 TGCCTGGTGG TGGACGTGAG CCACGAAGAC CCTGAGGTCA AGTTCAACTG GTACGTGGAC 2640  
 GGGCTGGAGG TGCATAATGC CAAGACAAAG CCGCGGGAGG AGCAGTACAA CAGCACGTAC 2700  
 CGTGTGGTCA GCGTCCTCAC CGTCCTGCAC CAGGACTGGC TGAATGGCAA GGAATACAAG 2760  
 TGCAAGGTCT CCAACAAAGC CCTCCCAGCC CCCATCGAGA AAACCATCTC CAAAGCCAAA 2820  
 GGGCAGCCCC GAGAACCACA GGTGTACACC CTGCCCCCAT CCCGGGATGA GCTGACCAGG 2880  
 AACCAGGTCA GCCTGACCTG CCTGGTCAAA GGCTTCTATC CCAGCGACAT CGCCGTGGAG 2940  
 TGGGAGAGCA ATGGGCAGCC GGAGAACAAC TACAAGACCA CGCCTCCCGT GCTGGACTCC 3000

FIG. 2B

4/21

GACGGCTCCT TCTTCCTCTA CAGCAAGCTC ACCGTGGACA AGAGCAGGTG GCAGCAGGGG 3060  
AACGTCTTCT CATGCTCCGT GATGCATGAG GCTCTGCACA ACCACTACAC GCAGAAGAGC 3120  
**STOP HEAVY CHAIN |Bam HI** **LINKER #7=81bp**  
CTCTCCCTGT CTCGGGTAA ATGAGGATCC GTTAACGGTT ACCAACTACC TAGACTGGAT 3180  
3144 5  
TCGTGACAAC ATGCGGCCGT GATATCTACG TATGATCAGC CTCGACTGTG CTTTCTAGTT 3240  
3225 6  
GCCAGCCATC TGTGTTTTC CCGTCCCCCG TGCCTTCCTT GACCCTGGAA GGTGCCACTC 3300  
**BOVINE GROWTH HORMONE POLYADENYLATION REGION=231bp**  
CCACTGTCTT TTCCTAATAA AATGAGGAAA TTGCATCGCA TTGTCTGAGT AGGTGTCATT 3360  
CTATTCTGGG GGGTGGGGTG GGGCAGGACA GCAAGGGGGA GGATTGGGAA GACAATACCA 3420  
**LINKER #8=34bp**  
GGCATGCTGG GGATGCGGTG GGCTCTATGG AACCAGCTGG GGCTCGACAG CGCTGGATCT 3480  
3456 7  
CCCGATCCCC AGCTTTGCTT CTCAATTTCT TATTTGCATA ATGAGAAAAA AAGGAAAATT 3540  
3490 1  
AATTTTAACA CCAATTCAGT AGTTGATTGA GCAAATGCGT TGCCAAAAAG GATGCTTTAG 3600  
**MOUSE BETA GLOBIN MAJOR PROMOTER=366bp**  
AGACAGTGTT CTCTGCACAG ATAAGGACAA ACATTATTCA GAGGGAGTAC CCAGAGCTGA 3660  
GACTCCTAAG CCAGTGAGTG GCACAGCATT CTAGGGAGAA ATATGCTTGT CATCACCGAA 3720  
GCCTGATTCC GTAGAGCCAC ACCTTGGTAA GGGCCAATCT GCTCACACAG GATAGAGAGG 3780  
GCAGGAGCCA GGGCAGAGCA TATAAGGTGA GGTAGGATCA GTTGCTCCTC ACATTTGCTT 3840  
**LINKER #9=19bp** **5' UNTRANSLATED DHFR=82bp**  
CTGACATAGT TGTGTTGGGA GCTTGGATAG CTTGGACAGC TCAGGGCTGC GATTTGCGGC 3900  
3856 7 3875 6  
**START DHFR**  
CAAAC TTGAC GGCAATCCTA GCGTGAAGGC TGGTAGGATT TTATCCCCGC TGCCATCATC 3960  
3957 8  
GTTCGACCAT TGAAGTGCAT CGTCGCCGTG TCCCAAAATA TGGGGATTGG CAAGAACGGA 4020  
GACCTACCCT GGCCTCCGCT CAGGAACGAG TTCAAGTACT TCCAAAGAAT GACCACAACC 4080  
TCTTCAGTGG AAGGTAAACA GAATCTGGTG ATTATGGGTA GGAAAACCTG GTTCTCCATT 4140  
**MOUSE DHFR=564bp=187 AMINO ACID & STOP CODON**  
CCTGAGAAGA ATCGACCTTT AAAGGACAGA ATTAATATAG TTCTCAGTAG AGAACTCAAA 4200  
GAACCACCAC GAGGAGCTCA TTTTCTTGCC AAAAGTTTGG ATGATGCCTT AAGACTTATT 4260  
GAACAACCGG AATTGGCAAG TAAAGTAGAC ATGGTTTGGG TAGTCGGAGG CAGTTCTGTT 4320  
TACCAGGAAG CCATGAATCA ACCAGGCCAC CTTAGACTCT TTGTGACAAG GATCATGCAG 4380  
GAATTTGAAA GTGACACGTT TTTCCAGAA ATTGATTTGG GGAAATATAA ACTTCTCCCA 4440  
GAATACCCAG GCGTCCTCTC TGAGGTCCAG GAGGAAAAAG GCATCAAGTA TAAGTTTGAA 4500

FIG. 2C

5/21

STOP DHFR  
GTCTACGAGA AGAAAGAC TA ACAGGAAGAT GCTTTCAAGT TCTCTGCTCC CCTCCTAAAG 4560  
4521 2

3' UNTRANSLATED DHFR=82bp LINKER #10=10bp  
TCATGCATTT TTATAAGACC ATGGGACTTT TGCTGGCTTT AGATCAGCCT CGACTGTGCC 4620  
4603 4 4613 4

TTCTAGTTGC CAGCCATCTG TTGTTTGCCC CTCCCCCGTG CCTTCCTTGA CCCTGGAAGG 4680

BOVINE GROWTH HORMONE POLYADENYLATION REGION=231bp  
TGCCACTCCC ACTGTCCTTT CCTAATAAAA TGAGGAAATT GCATCGCATT GTCTGAGTAG 4740

GTGTCAATTCT ATTCTGGGGG GTGGGGTGGG GCAGGACAGC AAGGGGGAGG ATTGGGAAGA 4800

CAATAGCAGG CATGCTGGGG ATGCGGTGGG CTCTATGGAA CCAGCTGGGG CTCGAGCTAC 4860  
4844 5 LINKER #11=17bp

TAGCTTTGCT TCTCAATTTT TTATTTGCAT AATGAGAAAA AAAGGAAAAAT TAATTTTAAC 4920

ACCAATTCAG TAGTTGATTG AGCAAATGCG TTGCCAAAAA GGATGCTTTA GAGACAGTGT 4980

MOUSE BETA GLOBIN MAJOR PROMOTER=366bp  
TCTCTGCACA GATAAGGACA AACATTATTC AGAGGGAGTA CCCAGAGCTG AGACTCCTAA 5040

GCCAGTGAGT GGCACAGCAT TCTAGGGAGA AATATGCTTG TCATCACCGA AGCCTGATTG 5100

CGTAGAGCCA CACCTTGGTA AGGGCCAATC TGCTCACACA GGATAGAGAG GGCAGGAGCC 5160

AGGGCAGAGC ATATAAGGTG AGGTAGGATC AGTTGCTCCT CACATTTGCT TCTGACATAG 5220

LINKER #12=21bp START NEO  
TTGTGTTGGG AGCTTGGATC GATCCTCTAT GTTGAACAA GATGGATTGC ACGCAGGTTT 5280  
5227 8 5248 9

TCCGGCCGCT TGGGTGGAGA GGCTATTGCG CTATGACTGG GCACAACAGA CAATCGGCTG 5340

CTCTGATGCC GCCGTGTTCC GGCTGTCAGC GCAGGGGGCG CCGGTTCTTT TTGTCAAGAC 5400

NEOMYCIN PHOSPHOTRANSFERASE  
CGACCTGTCC GGTGCCCTGA ATGAACTGCA GGACGAGGCA GCGGGGCTAT CGTGGCTGGC 5460

795bp=264 AMINO ACIDS & STOP CODON  
CACGACGGGC GTTCCTTGCG CAGCTGTGCT CGACGTTGTC ACTGAAGCGG GAAGGGACTG 5520

GCTGCTATTG GGCGAAGTGC CGGGGCAGGA TCTCCTGTCA TCTCACCTTG CTCCTGCCG 5580

GAAAGTATCC ATCATGGCTG ATGCAATGCG GCGGCTGCAT ACGCTTGATC CGGCTACCTG 5640

CCCATTCGAC CACCAAGCGA AACATCGCAT CGAGCGAGCA CGTACTCGGA TGAAGCCGG 5700

TCTTGTCGAT CAGGATGATC TGGACGAAGA GCATCAGGGG CTCGCGCCAG CCGAACTGTT 5760

CGCCAGGCTC AAGGCGCGCA TGCCCGACGG CGAGGATCTC GTCGTGACCC ATGGCGATGC 5820

CTGCTTGCCG AATATCATGG TGGAAAATGG CCGCTTTTCT GGATTCATCG ACTGTGGCCG 5880

GCTGGGTGTG GCGGACCGCT ATCAGGACAT AGCGTTGGCT ACCCGTGATA TTGCTGAAGA 5940

GCTTGGCGGC GAATGGGCTG ACCGCTTCCT CGTGCTTTAC GGTATCGCCG CTCCCGATTG 6000

FIG. 2D

6/21

GCAGCGCATC GCCTTCTATC GCCTTCTTGA CGAGTTCTTC TGAGCGGGAC TCTGGGGTTC 6060  
604314  
GAAATGACCG ACCAAGCGAC GCCCAACCTG CCATCACGAG ATTTGATTTC CACCGCCGCC 6120  
3' UNTRANSLATED NEO=173bp  
TTCTATGAAA GGTTGGGCTT CGGAATCGTT TTCCGGGACG CCGGCTGGAT GATCCTCCAG 6180  
CGCGGGGATC TCATGCTGGA GTTCTTCGCC CACCCCAACT TGTTTATTGC AGCTTATAAT 6240  
621617  
GGTTACAAAT AAAGCAATAG CATCACAAAT TTCACAAATA AAGCATTTTTT TCACTGCAT 6300  
SV40 POLY A EARLY=133bp LINKER #13=19bp  
TCTAGTTGTG GTTTGTCCAA ACTCATCAAT CTATCTTATC ATGTCTGGAT CGCGGCCGCG 6360  
6349150  
ATCCCGTGA GAGCTTGGCG TAATCATGGT CATAGCTGTT TCCTGTGTGA AATTGTTATC 6420  
636819  
CGCTCACAAT TCCACACAAC ATACGAGCCG GAAGCATAAA GTGTAAAGCC TGGGGTGCCT 6480  
AATGAGTGAG CTAACTCACA TTAATTGCGT TCGCTCACT GCCCGCTTTC CAGTCGGGAA 6540  
ACCTGTCGTG CCAGCTGCAT TAATGAATCG GCCAACGCGC GGGGAGAGGC GGTTTGCGTA 6600  
PVC 19  
TTGGGCGCTC TTCCGCTTCC TCGCTCACTG ACTCGCTGCG CTCGGTCGTT CGGCTGCGGC 6660  
GAGCGGTATC AGCTCACTCA AAGGCGGTAA TACGGTTATC CACAGAATCA GGGGATAACG 6720  
CAGGAAAGAA CATGTGAGCA AAAGGCCAGC AAAAGGCCAG GAACCGTAHA AAGGCCGCGT 6780  
6792=BACTERIAL ORIGIN OF REPLICATION  
TGCTGGCGTT TTCCATAGG CTCCGCCCCC CTGACGAGCA TCACAAAAAT CGACGCTCAA 6840  
GTCAGAGGTG GCGAAACCCG ACAGGACTAT AAAGATACCA GCGTTTTCCC CCTGGAAGCT 6900  
CCCTCGTGCG CTCTCCTGTT CCGACCCTGC CGCTTACCGG ATACCTGTCC GCCTTTCTCC 6960  
CTTCGGGAAG CGTGGCGCTT TCTCAATGCT CACGCTGTAG GATCTCAGT TCGGTGTAGG 7020  
TCGTTGCTC CAAGCTGGG CAGGTGACG AACCCCCGT TCAGCCCGAC CGCTGCGCCT 7080  
TATCCGGTAA CTATCGTCTT GAGTCCAACC CGGTAAGACA CGACTTATCG CCACTGGCAG 7140  
CAGCCACTGG TAACAGGATT AGCAGAGCGA GGTATGTAGG CCGTGCTACA GAGTTCTTGA 7200  
AGTGGTGGCC TAACTACGGC TACACTAGAA GGACAGTATT TGGTATCTGC GCTCTGCTGA 7260  
AGCCAGTTAC CTTCGGAAAA AGAGTTGGTA GCTCTTGATC CGGCAACAA ACCACCGCTG 7320  
GTAGCGGTGG TTTTTTTGTT TGCAAGCAGC AGATTACGCG CAGAAAAAAA GGATCTCAAG 7380  
AAGATCCTTT GATCTTTTCT ACGGGGTCTG ACGCTCAGTG GAACGAAAAC TCACGTTAAG 7440  
GGATTTTGGT CATGAGATTA TCAAAAAGGA TCTTCACCTA GATCCTTTTA AATTAAAAAT 7500

FIG. 2E

7/21

GAAGTTTTAA ATCAATCTAA AGTATATATG AGTAAACTTG GTCTGACAGT TACCAATGCT 7560  
STOP BETA LACTAMASE  
7550  
TAATCAGTGA GGCACCTATC TCAGCGATCT GTCTATTTTCG TTCATCCATA GTTGCCTGAC 7620  
TCCCCGTCGT GTAGATAACT ACGATACGGG AGGGCTTACC ATCTGGCCCC AGTGCTGCAA 7680  
TGATACCGCG AGACCCACGC TCACCGGCTC CAGATTTATC AGCAATAAAC CAGCCAGCCG 7740  
BETA LACTAMASE=861bp  
GAAGGGCCGA GCGCAGAAGT GGTCCCTGCAA CTTTATCCGC CTCCATCCAG TCTATTAATT 7800  
286 AMINO ACID & STOP CODON  
GTTGCCGGGA AGCTAGAGTA AGTAGTTCGC CAGTTAATAG TTTGCGCAAC GTTGTTGCCA 7860  
TTGCTACAGG CATCGTGGTG TCACGCTCGT CGTTTGGTAT GGCTTCATTC AGCTCCGGTT 7920  
CCCAACGATC AAGGCGAGTT ACATGATCCC CCATGTTGTG CAAAAAGCG GTTAGCTCCT 7980  
TCGGTCCTCC GATCGTTGTC AGAAGTAAGT TGGCCGCACT GTTATCACTC ATGGTTATGG 8040  
CAGCACTGCA TAATTCTCTT ACTGTCATGC CATCCGTAAG ATGCTTTTCT GTGACTGGTG 8100  
AGTACTCAAC CAAGTCATTC TGAGAATAGT GTATGCGGCG ACCGAGTTGC TCTTGCCCGG 8160  
CGTCAATACG GGATAATACC GCGCCACATA GCAGAACTTT AAAAGTGCTC ATCATTGGAA 8220  
AACGTTCTTC GGGGCGAAAA CTCTCAAGGA TCTTACCGCT GTTGAGATCC AGTTCGATGT 8280  
AACCCACTCG TGCACCCAAC TGATCTTCAG CATCTTTTAC TTTCACCAGC GTTTCTGGGT 8340  
GAGCAAAAC AGGAAGGCAA AATGCCGCAA AAAAGGGAAT AAGGGCGACA CGGAAATGTT 8400  
START BETA LACTAMASE  
GAATACTCAT ACTCTTCCTT TTTCAATATT ATTGAAGCAT TTATCAGGGT TATTGTCTCA 8460  
8410  
TGAGCGGATA CATATTTGAA TGTATTTAGA AAAATAAACA AATAGGGGTT CCGCGCACAT 8520  
TTCCCCGAAA AGTGCCACCT

FIG. 2F

8/21

LINKER #1=15bp  
 GACGTCGCGG CCGCTCTAGG CCTCCAAAA AGCCTCCTCA CTACTTCTGG AATAGCTCAG 60  
 AGGCCGAGGC GGCCTCGGCC TCTGCATAAA TAAAAAAAT TAGTCAGCCA TGCATGGGGC 120  
 SV40 ORIGIN=332bp  
 GGAGAATGGG CGGAAC TGG CCGAGTTAGG GCGGGGATGG GCGGAGTTAG GGGCGGGACT 180  
 ATGGTTGCTG ACTAATTGAG ATGCATGCTT TGCATACTTC TGCCTGCTGG GGAGCCTGGG 240  
 GACTTTCCAC ACCTGGTTGC TGAATAATTG AGATGCATGC TTTGCATACT TCTGCCTGCT 300  
 LINKER #2=13bp  
 GGGGAGCCTG GGGACTTTCC ACACCCTAAC TGACACACAT TCCACAGAAAT TAATTCCTCT 347'8 360  
 AGTTATTAAT AGTAATCAAT TACGGGGTCA TTAGTTCATA GCCCATATAT GGAGTTCCGC 420  
 GTTACATAAC TTACGGTAAA TGGCCCGCCT GGCTGACCGC CCAACGACCC CCGCCCATTTG 480  
 ACGTCAATAA TGACGTATGT TCCCATAGTA ACGCCAATAG GGACTTTCCA TTGACGTCAA 540  
 CVM PROMOTER-ENHANCER=567bp  
 TGGGTGGACT ATTTACGGTA AACTGCCAC TTGGCAGTAC ATCAAGTGTA TCATATGCCA 600  
 AGTACGCCCC CTATTGACGT CAATGACGGT AAATGGCCCCG CCTGGCATTG TGCCAGTAC 660  
 ATGACCTTAT GGGACTTTCC TACTTGGCAG TACATCTACG TATTAGTCAT CGCTATTACC 720  
 ATGGTGATGC GGTTTTGGCA GTACATCAAT GGGCGTGGAT AGCGGTTTGA CTCACGGGGA 780  
 TTTCCAAGTC TCCACCCCAT TGACGTCAAT GGGAGTTTGT TTTGGCACCA AAATCAACGG 840  
 GACTTTCCAA AATGTCGTAA CAACTCCGCC CCATTGACGC AAATGGGCGG TAGGCGTGTA 900  
 LINKER #3=7bp  
 CGGTGGGAGG TCTATATAAG CAGAGCTGGG TACGTGAACC GTCAGATCGC CTGGAGACGC 927'8 934'5 960  
 Bgl 2 START LIGHT CHAIN NATURAL LEADER=66bp  
 CATCACAGAT CTCTCACTAT GGATTTTCAG GTGCAGATTA TCAGCTTCCT GCTAATCAGT 978'9 1020  
 GCTTCAGTCA TAATGTCCAG AGGACAAATT GTTCTCTCCC AGTCTCCAGC AATCCTGTCT 1044'5+1 1080  
 GCATCTCCAG GGGAGAAGGT CACAATGACT TGCAGGGCCA GCTGAAGTGT AAGTTACATC 1140  
 CACTGGTTCC AGCAGAAGCC AGGATCCTCC CCCAAACCTT GGATTTATGC CACATCCAAC 1200  
 LIGHT CHAIN VARIABLE REGION 318bp 106 AMINO ACID  
 CTGGCTTCTG GAGTCCCTGT TCGCTTCAGT GGCAGTGGGT CTGGGACTTC TTAATCTCTC 1260  
 ACCATCAGCA GAGTGGAGGC TGAAGATGCT GCCACTTATT ACTGCCAGCA GTGGACTAGT 1320  
 AACCCACCCA CGTTCGGAGG GGGGACCAAG CTGGAAATCA AACGTACGGT GGCTGCACCA 1362'3 1380  
 TCTGTCTTCA TCTTCCCGCC ATCTGATGAG CAGTTGAAAT CTGGAAGTGC CTCTGTTGTG 1440  
 TGCCTGCTGA ATAATTCTA TCCAGAGAG GCCAAAGTAC AGTGAAGGT GGATAACGCC 1500

FIG. 3A



9/21

HUMAN KAPPA CONSTANT=324bp=107 AMINO ACID & STOP CODON  
 CTCCAATCGG GTAAC TCCCA GGAGAGTGTC ACAGAGCAGG ACAGCAAGGA CAGCACCTAC 1560  
 AGCCTCAGCA GCACCCTGAC GCTGAGCAAA GCAGACTACG AGAAACACAA AGTCTACGCC 1620  
 TGCGAAGTCA CCCATCAGGG CCTGAGCTCG CCCGTCACAA AGAGCTTCAA CAGGGGAGAG 1680  
 STOP  
 LIGHT  
 CHAIN Eco RI LINKER #4=81bp  
 TGT TGAATTC AGATCCGTTA ACGGTTACCA ACTACCTAGA CTGGATTCTG GACAACA<sup>-</sup>GC 1740  
 1646 7  
 GGCCGTGATA TCTACGTATG ATCAGCCTCG ACTGTGCCTT CTAGTTGCCA GCCATCTGTT 1800  
 1771 2  
 GTTTGCCCCCT CCCCCGTGCC TTCCTTGACC CTGGAAGGTG CCACTCCCAC TGTCTTTTCC 1860  
 TAATAAAATG AGGAAATTGC ATCGCATTGT CTGAGTAGGT GTCATTCTAT TCTGGGGGGT 1920  
 BOVINE GROWTH HORMONE POLYADENYLATION REGION=231bp  
 GGGGTGGGGC AGGACAGCAA GGGGGAGGAT TGGGAAGACA ATAGCAGGCA TGCTGGGGAT 1980  
 GCGGTGGGCT CTATGGAACC AGCTGGGGCT CGACAGCTAT GCCAAGTACG CCCCTATTG 2040  
 2002 3 2017 8  
 ACGTCAATGA CGGTAAATGG CCCGCCTGGC ATTATGCCCA GTACATGACC TTATGGGACT 2100  
 TTCCTACTTG GCAGTACATC TACGTATTAG TCATCGCTAT TACCATGGTG ATGCGGTTTT 2160  
 CMV PROMOTER-ENHANCER=334bp  
 GGCAGTACAT CAATGGGCGT GGATAGCGGT TTGACTCACG GGGATTTCCA AGTCTCCACC 2220  
 CCATTGACGT CAATGGGAGT TTGTTTTGGC ACCAAAATCA ACGGGACTTT CAAAATGTC 2280  
 GTAACAATC CGCCCCATTG ACGCAAATGG GCGGTAGGCG TGTACGGTGG GAGGTCTATA 2340  
 LINKER #6=7bp Sal I  
 TAAGCAGAGC TGGGTACGTC CTCACATTCA GTGATCAGCA CTGAACACAG ACCCGTCCGAC 2400  
 2351 2 2358 9  
 START  
 HEAVY CHAIN SYNTHETIC & NATURAL LEADER Mlu I 2457 8  
 ATGGGTGGA GCCTCATCTT GCTCTTCCTT GTCGCTGTTG CTACGCGTGT CCTGTCCGAG 2460  
 2401 -5 -4 -3 -2 -1 +1  
 GTACAACTGC AGCAGCCTGG GGCTGAGCTG GTGAAGCCTG GGGCCTCAGT GAAGATGTCC 2520  
 TGCAAGGCTT CTGGCTACAC ATTTACCAGT TACAATATGC ACTGGGTAAA ACAGACACCT 2580  
 HEAVY CHAIN VARIABLE=363bp=121 AMINO ACID  
 GGTCGGGGCC TGGAAATGGAT TGGAGCTATT TATCCCGGAA ATGGTGATAC TTCCTACAAT 2640  
 CAGAAGTTCA AAGGCAAGGC CACATTGACT GCAGACAAAT CCTCCAGCAC AGCCTACATG 2700  
 CAGCTCAGCA GCCTGACATC TGAGGACTCT GCGGTCTATT ACTGTGCAAG ATCGACTTAC 2760  
 TACGGCGGTG ACTGGTACTT CAATGTCTGG GGCGCAGGGA CCACGGTCAC CGTCTCTGCA 2820  
Nhe I  
 GCTAGCACCA AGGGCCCATC GGTCTTCCCC CTGGCACCCCT CCTCCAAGAG CACCTCTGGG 2880  
 GGCACAGCGG CCCTGGGCTG CCTGGTCAAG GACTACTTCC CCGAACCAGT GACGGTGTCTG 2940  
 HUMAN GAMMA 1 CONSTANT=993bp  
 TGGAAGTCAG GCGCCCTGAC CAGCGGCGTG CACACCTTCC CGGCTGTCTT ACAGTCCTCA 3000

FIG. 3B

10/21

330 AMINO ACID & STOP CODON  
GGACTCTACT CCCTCAGCAG CGTGGTGACC GTGCCCTCCA GCAGCTTGGG CACCCAGACC 3060  
TACATCTGCA ACGTGAATCA CAAGCCCAGC AACACCAAGG TGGACAAGAA AGCAGAGCCC 3120  
AAATCTTGTG AAAAACTCA CACATGCCCA CCGTGCCCAG CACCTGAACT CCTGGGGGGA 3180  
CCGTCAGTCT TCCTCTTCCC CCCAAAACCC AAGGACACCC TCATGATCTC CCGGACCCCT 3240  
GAGGTCACAT GCGTGGTGGT GGACGTGAGC CACGAAGACC CTGAGGTCAA GTTCAACTGG 3300  
TACGTGGACG GCGTGGAGGT GCATAATGCC AAGACAAAGC CGCGGGAGGA GCAGTACAAC 3360  
AGCACGTACC GTGTGGTCAG CGTCCTCACC GTCCTGCACC AGGACTGGCT GAATGGCAAG 3420  
GAGTACAAGT GCAAGGTCTC CAACAAAGCC CTCCCAGCCC CCATCGAGAA AACCATCTCC 3480  
AAAGCCAAAG GGCAGCCCCG AGAACCACAG GTGTACACCC TGCCCCCATC CCGGGATGAG 3540  
CTGACCAAGA ACCAGGTGAG CCTGACCTGC CTGGTCAAAG GCTTCTATCC CAGCGACATC 3600  
GCCGTGGAGT GGGAGAGCAA TGGGCAGCCG GAGAACAAC ACAAGACCAC GCCTCCCGTG 3660  
CTGGACTCCG ACGGCTCCTT CTTCCTCTAC AGCAAGCTCA CCGTGGACAA GAGCAGGTGG 3720  
CAGCAGGGGA ACGTCTTCTC ATGCTCCGTG ATGCATGAGG CTCTGCACAA CCACTACACG 3780  
CAGAAGAGCC TCTCCCTGTC TCCGGGTAAA TGAGGATCCG TTAACGGTTA CCAACTACCT 3840  
STOP HEAVY CHAIN Bam HI LINKER #7=81bp  
3813 4  
AGACTGGATT CGTGACAACA TGCGGCCGTG ATATCTACGT ATGATCAGCC TCGACTGTGC 3900  
3894 5  
CTTCTAGTTG CCAGCCATCT GTTGTITGCC CCTCCCCCGT GCCTTCCTTG ACCCTGGAAG 3960  
GTGCCACTCC CACTGTCCTT TCCTAATAAA ATGAGGAAAT TGCATCGCAT TGTCTGAGTA 4020  
BOVINE GROWTH HORMONE POLYADENYLATION REGION=231bp  
GGTGTCAATC TATTCTGGGG GGTGGGGTGG GGCAGGACAG CAAGGGGGAG GATTGGGAAG 4080  
ACAATAGCAG GCATGCTGGG GATGCGGTGG GCTCTATGGA ACCAGCTGGG GCTCGACAGC 4140  
LINKER #8=34bp  
4125 6  
GCTGGATCTC CCGATCCCCA GCTTTGCTTC TCAATTTCTT ATTTGCATAA TGAGAAAAAA 4200  
AGGAAAATTA ATTTTAACAC CAATTCAGTA GTTGATTGAG CAAATGCGTT GCCAAAAAGG 4260  
MOUSE BETA GLOBIN MAJOR PROMOTER=366bp  
ATGCTTTAGA GACAGTGGTC TCTGCACAGA TAAGGACAAA CATTATTGAG AGGGAGTACC 4320  
CAGAGCTGAG ACTCCTAAGC CAGTGAGTGG CACAGCATTC TAGGGAGAAA TATGCTTGTC 4380  
ATCACCGAAG CCTGATTCCG TAGAGCCACA CCTTGGAAG GGCCAATCTG CTCACACAGG 4440  
ATAGAGAGGG CAGGAGCCAG GGCAGAGCAT ATAAGGTGAG GTAGGATCAG TTGCTCCTCA 4500

FIG. 3C

11/21

CATTGCTTC TGACATAGTT LINKER #9=19bp 5' UNTRANSLATED DHFR=82bp  
 4525 6 4544 5 4560  
 ATTCGCGCC AAACCTTGACG GCAATCCTAG CGTGAAGGCT GGTAGGATTT TATCCCCGCT 4620  
START DHFR  
 GCCATCATGG TTGACCATTT GAACTGCATC GTCGCCGTGT CCCAAAATAT GGGGATTGGC 4680  
 4626 7  
 AAGAACGGAG ACCTACCCTG GCCTCCGCTC AGGAACGAGT TCAAGTACTT CCAAAGAATG 4740  
 ACCACAACCT CTTCACTGGA AGGTAAACAG AATCTGGTGA TTATGGGTAG GAAAACCTGG 4800  
DHFR=564bp=187 AMINO ACID & STOP CODON  
 TTCTCCATTC CTGAGAAGAA TCGACCTTTA AAGGACAGAA TTAATATAGT TCTCAGTAGA 4860  
 GAACTCAAAG AACCACCACG AGGAGCTCAT TTTCTTGCCA AAAGTTTGGG TGATGCCTTA 4920  
 AGACTTATTG AACAAACCGG ATTGGCAAGT AAAGTAGACA TGGTTTGGAT AGTCGGAGGC 4980  
 AGTTCTGTTT ACCAGGAAGC CATGAATCAA CCAGGCCACC TTAGACTCTT TGTGACAAGG 5040  
 ATCATGCAGG AATTTGAAAG TGACACGTTT TTCCAGAAA TTGATTTGEG GAAATATAAA 5100  
 CTTCTCCCAG AATACCCAGG CGTCCTCTCT GAGGTCCAGG AGGAAAAAGG CATCAAGTAT 5'60  
STOP DHFR 3' UNTRANSLATED DHFR=82bp  
 AAGTTTGAAG TCTACGAGAA GAAAGACTAA CAGGAAGATG CTTTCAAGTT CTCTGCTCCC 5220  
 5140 1 5272 3  
 CTCCTAAAGC TATGCATTTT TATAAGACCA TGGGACTTTT GCTGGCTTTA LINKER #10  
=10bp GATCAGCCTC 5280  
 GACTGTGCCT TCTAGTTGCC AGCCATCTGT TGTTTGCCCC TCCCCCGTGC CTTCTTTGAC 5340  
BOVINE GROWTH HORMONE POLYADENYLATION=231bp  
 CCTGGAAGGT GCCACTCCCA CTGTCCTTTC CTAATAAAAT GAGGAAATTG CATCGCATTG 5400  
 TCTGAGTAGG TGTCATTCTA TTCTGGGGGG TGGGGTGGGG CAGGACAGCA AGGGGGAGGA 5460  
LINKER #11  
 TTGGAAGAC AATAGCAGGC ATGCTGGGGA TCGGTGGGC TCTATGGAAC CAGCTGGGGC 5520  
 5513 4  
=17bp  
 TCGAGCTACT AGCTTTGCTT CTCAATTTCT TATTTGCATA ATGAGAAAAA AAGGAAAATT 5580  
 5530 1  
 AATTTAACA CCAATTCAGT AGTTGATTGA GCAAATGCGT TGCCAAAAAG GATGCTTTAG 5640  
MOUSE BETA GLOBIN MAJOR PROMOTER=366bp  
 AGACAGTGTT CTCTGCACAG ATAAGGACAA CTAGGGAGAA ATATGCTTGT CATCACCGAA 5700  
 GACTCCTAAG CCAGTGAGTG GCACAGCATT CTAGGGAGAA ATATGCTTGT CATCACCGAA 5760  
 GCCTGATTCC GTAGAGCCAC ACCTTGGTAA GGGCCAATCT GCTCACACAG GATAGAGAGG 5820  
 GCAGGAGCCA GGGCAGAGCA TATAAGGTGA GGTAGGATCA GTTGCTCCTC ACATTTGCTT 5880  
LINKER #12=21bp START NEO  
 CTGACATAGT TGTGTTGGGA GCTTGGATCG ATCCTCTATG GTTGAACAAG ATGGATTGCA 5940  
 5896 7 5917 8  
 CGCAGGTTCT CCGGCCGCTT GGGTGGAGAG GCTATTCGSC TATGACTGGG CACAACAGAC 6000

FIG. 3D

12/21

AATCGGCTGC TCTGATGCCG CCGTGTTCGG GCTGTCAGCG CAGGGGCGGC CGGTTCTTTT 6060  
**NEOMYCIN PHOSPHOTRANSFERASE=795bp=264 AMINO ACID & STOP CODON**  
 TGTCAAGACC GACCTGTCCG GTGCCCTGAA TGAAGTGCAG GACGAGGCAG CGCGGCTATC 6120  
 GTGGCTGGCC ACGACGGGCG TTCCTTGCGC AGCTGTGCTC GACGTTGTCA CTGAAGCGGG 6180  
 AAGGGACTGG CTGCTATTGG GCGAAGTGCC GGGGCAGGAT CTCCTGTCAT CTCACCTTGC 6240  
 TCCTGCCGAG AAAGTATCCA TCATGGCTGA TGCAATGCGG CGGCTGCATA CGCTTGATCC 6300  
 GGCTACCTGC CCATTGACC ACCAAGCGAA ACATCGCATC GAGCGAGCAC GTACTCGGAT 6360  
 GGAAGCCGGT CTTGTGATC AGGATGATCT GGACGAAGAG CATCAGGGGC TCGCGCCAGC 6420  
 CGAACTGTTT GCCAGGCTCA AGGCGCGCAT GCGCGACGGC GAGGATCTCG TCGTGACCCA 6480  
 TGGCGATGCC TGCTTGCCGA ATATCATGGT GGAAAATGGC CGCTTTTCTG GATTCATCGA 6540  
 CTGTGGCCGG CTGGGTGTGG CGGACCGCTA TCAGGACATA GCGTTGGCTA CCCGTGATTA 6600  
 TGCTGAAGAG CTTGGCGGCG AATGGGCTGA CCGCTTCCTC GTGCTTTAAG GTATCGCGGC 6660  
 TCCCGATTCT CAGCGCATCG CCTTCTATCG CCTTCTTGA **STOP NEO** GAGTTCTTCT **GAGCGGGACT** 6720  
 CTGGGGTTCT AAATGACCGA CCAAGCGACG CCAACCTGC CATCAGGAGA TTTCGATTCC 6780  
 ACCGCCGCCT TCTATGAAAG GTTGGGCTTC GGAATCGTTT TCCGGGACGC CGGCTGGATG 6840  
 ATCCTCCAGC GCGGGGATCT CATGCTGGAG TTCTTCGCGC ACCCGAACTT GTTTATTGCA 6900  
 GCTTATAATG GTTACAAATA AAGCAATAGC ATCACAATT TCACAAATA AGCATTTTTT 6960  
 TCACTGCATT CTAGTTGTGG TTTGTCCAAA CTCATCAATC TATCTTATCA TGTCTGGATC 7020  
**SV40 EARLY POLYADENYLATION REGION=133bp**  
**LINKER #13=19bp** TCCCGTCTGAG AGCTTGGCGT AATCATGGTC ATAGCTGTTT CCTGTGTGAA 7080  
**7037 8**  
**PUC 19**  
 ATTGTTATCC GCTCACAATT CCACACAACA TACGAGCCGG AAGCATAAAG TGTAAGCCT 7140  
 GGGGTGCCA ATGAGTGAGC TAACTCACAT TAATTGCGTT GCGCTCACTG CCGCTTTTC 7200  
 AGTCGGGAAA CCTGTGCTGC CAGCTGCATT AATGAATCGG CCAACGCGCG GGGAGAGGCG 7260  
 GTTTGCGTAT TGGGCGCTCT TCCGCTTCCT CGCTCACTGA CTCGCTGCGC TCGGTCGTTT 7320  
 GGCTGCGGCG AGCGGTATCA GCTCACTCAA AGGCGGTAAT ACGGTTATCC ACAGAATCAG 7380  
 GGGATAACGC AGGAAAGAAC ATGTGAGCAA AAGGCCAGCA AAAGGCCAGG AACCGTAAAA 7440  
**7461=BACTERIAL ORIGIN OF REPLICATION**  
 AGGCCGCGTT GCTGGCGTTT TCCATAGGC TCCGCCCCC TGACGAGCAT CACAAAAATC 7500

FIG. 3E

13/21

GACGCTCAAG TCAGAGGTGG CGAAACCCGA CAGGACTATA AAGATACCAG GCGTTTCCCC 7560  
 CTGGAAGCTC CCTCGTGCGC TCTCCTGTTT CGACCCTGCC GCTTACCGGA TACCTGTCCG 7620  
 CCTTTCTCCC TTCGGGAAGC GTGGCGCTTT CTCAATGCTC ACGCTGTAGG TATCTCAGTT 7680  
 CGGTGTAGGT CGTTCGCTCC AAGCTGGGCT GTGTGCACGA ACCCCCCGTT CAGCCCGACC 7740  
 GCTGCGCCTT ATCCGGTAAC TATCGTCTTG AGTCCAACCC GGTAAGACAC GACTTATCGC 7800  
 CACTGGCAGC AGCCACTGGT AACAGGATTA GCAGAGCGAG GTATGTAGGC GGTGCTACAG 7860  
 AGTTCTTGAA GTGGTGGCCT AACTACGGCT AACTAGAAAG GACAGTATTT GGTATCTGCG 7920  
 CTCTGCTGAA GCCAGTTACC TTCGGAAAAA GAGTTGGTAG CTCTTGATCC GGCAAACAAA 7980  
 CCACCGCTGG TAGCGGTGGT TTTTTTGTTC GCAAGCAGCA GATTACGCGC AGAAAAAAG 8040  
 GATCTCAAGA AGATCCTTTG ATCTTTTCTA CGGGGTCTGA CGCTCAGTGG AACGAAAACT 8100  
 CACGTTAAGG GATTTTGGTC ATGAGATTAT CAAAAAGGAT CTTACCTAG ATCCTTTTAA 8160  
 ATTA AAAATG AAGTTTTTAA TCAATCTAAA GTATATATGA GTAAACTTGG TCTGACAGTT STOP 8220  
BETA LACTAMASE  
ACCAATGCTT AATCAGTGAG GCACCTATCT CAGCGATCTG TCTATTTCTG TCATCCATAG 8280  
 TTGCCTGACT CCCCCTCGTG TAGATAACTA CGATACGGGA GGGCTTACCA TCTGGCCCCA 8340  
 GTGCTGCAAT GATACCGCGA GACCCACGCT CACCGGCTCC AGATTTATCA GCAATAAACCC 8400  
 BETA LACTAMASE=861bp=286 AMINO ACID & STOP CODON  
 AGCCAGCCGG AAGGGCCGAG CGCAGAAAGT GTCCTGCAAC TTTATCCGCC TCCATCCAGT 8460  
 CTATTAATTG TTGCCGGGAA GCTAGAGTAA GTAGTTCCGC AGTTAATAGT TTGCGCAACG 8520  
 TTGTTGCCAT TGCTACAGGC ATCGTGGTGT CACGCTCGTC GTTTGGTATG GCTTCATTCA 8580  
 GCTCCGGTTC CCAACGATCA AGGCGAGTTA CATGATCCCC CATGTTGTGC AAAAAAGCGG 8640  
 TTAGCTCCTT CGGTCCTCCG ATCGTTGTCA GAAGTAAGTT GGCCGCAGTG TTATCACTCA 8700  
 TGGTTATGGC AGCACTGCAT AATTCTCTTA CTGTCATGCC ATCCGTAAGA TGCTTTTCTG 8760  
 TGACTGGTGA GACTCAACC AAGTCATTCT GAGAATAGTG TATGCGGCGA CCGAGTTGCT 8820  
 CTTGCCCGGC GTCAATACGG GATAATACCG CGCCACATAG CAGAACTTTA AAAGTGCTCA 8880  
 TCATTGGAAA ACGTTCTTCG GGGCGAAAAC TCTCAAGGAT CTTACCGCTG TTGAGATCCA 8940  
 GGTCGATGTA ACCCACTCGT GCACCCAAC TATCTTCAGC ATCTTTTACT TTCACCAGCG 9000  
 TTTCTGGGTG AGCAAAAACA GGAAGGCAAA ATGCCGCAAA AAAGGGAATA AGGGCGACAC 9060  
 GGAAATGTTG AATACTCAT START BETA LACTAMASE  
 CTCTTCCTTT TTCAATATTA TTGAAGCATT TATCAGGGTT 9120  
 ATTGTCTCAT GAGCGGATAC ATATTTGAAT GTATTTAGAA AAATAAACAA ATAGGGGTTT 9180  
 CGCGCACATT TCCCCGAAAA GTGCCACCT

FIG. 3F

## 5



FIG. 4

15/21

LEADER

-19	-15	-10	-5
FRAME 1 Met Gly Trp Ser Leu Ile Leu Leu Phe Leu Val Ala Val Ala Thr Arg Val			
ATG GGT TGG AGC CTC ATC TTG CTC TTC CTT GTC GCT GTT GCT ACG CGT GTC			
2409	2418	2427	2436 2445
-1	FR1	10	15
Leu Ser Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys (Ala) Gly Ala Ser			
CTG TCC CAG GTA CAA CTG CAG CAG CCT GGG GCT GAG CTG GTG AAG CCT GGG GCC TCA			
2460	2469	2478	2487 2496 2505
20	25	30	31 CDR1 35 36
Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr Asn Met His Trp			
GTG AAG ATG TCC TGC AAG GCT TCT GGC TAC ACA TTT ACC AGT TAC AAT ATG CAC TGG			
2517	2526	2536	2544 2553 2562
40 FR2	45	49	50 52 52A 53 54
Val Lys Gln Thr Pro Gly Arg Gly Leu Glu Trp Ile Gly Ala Ile Tyr Pro Gly Asn			
GTA AAA CAG ACA CCT GGT CGG GGC CTG GAA TGG ATT GGA GCT ATT TAT CCC GGA AAT			
2574	2583	2592	2601 2610 2615
55 CDR2 60	65	66 FR3	70
Gly Asp Thr Ser Tyr Asn Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys			
GGT GAT ACT TCC TAC AAT CAG AAG TTC AAA GGC AAG GCC ACA TTG ACT GCA GAC AAA			
2631	2640	2649	2658 2667 2676
75	80	82	82A 82B 82C 83 85
Ser Ser Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val			
TCC TCC AGC ACA GCC TAC ATG CAG CTC AGC AGC CTG ACA TCT GAG GAC TCT GCG GTC			
2688	2697	2706	2715 2724 2733
90	94 95	CDR3	100 100A 100B 100C 100D 101 102 103
Tyr Tyr Cys Ala Arg Ser Thr Tyr Tyr Gly Gly Asn Trp Tyr Phe Asn Val Trp Gly			
TAT TAC TGT GCA AGA TCG ACT TAC TAC GGC GGT GAC TGG TAC TTC AAT GTC TGG GGC			
2745	2754	2763	2772 2781 2790
105 FR4	110	113	
Ala Gly Thr Thr Val Thr Val Ser Ala			
GCA GGG ACC ACG GTC ACC GTC TCT GCA			
2802	2811	2820	

FIG. 5

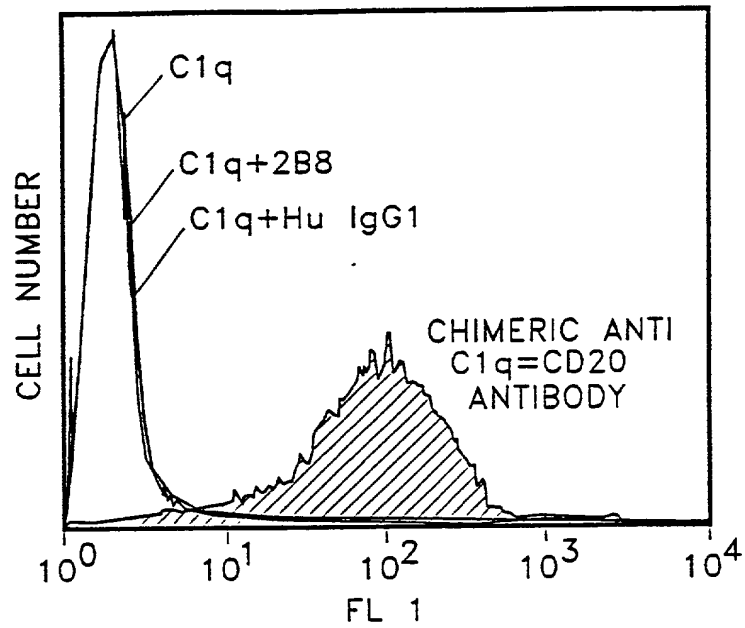


FIG. 6

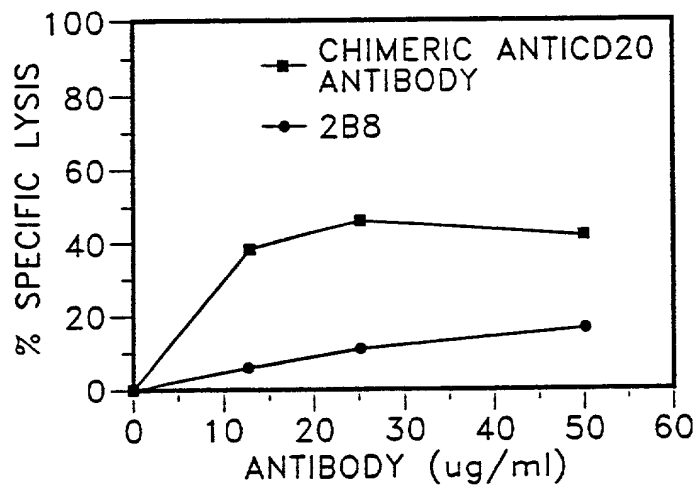
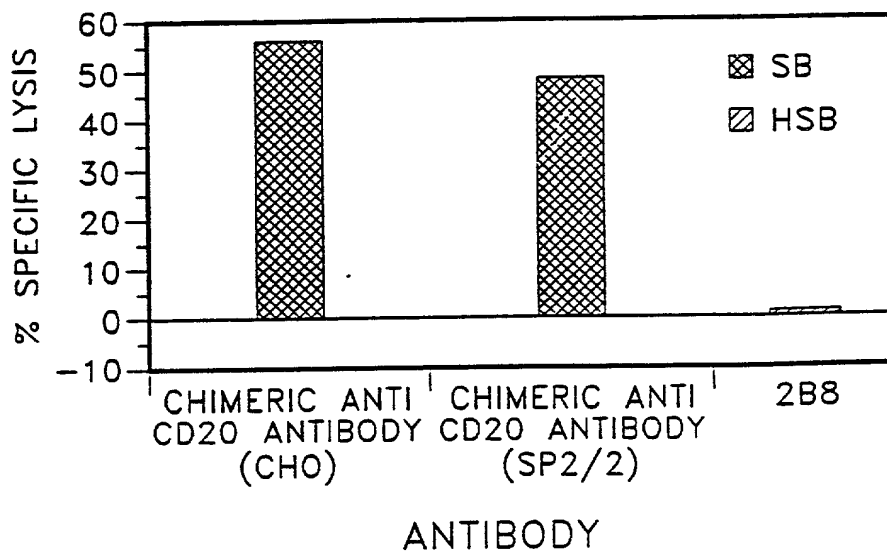
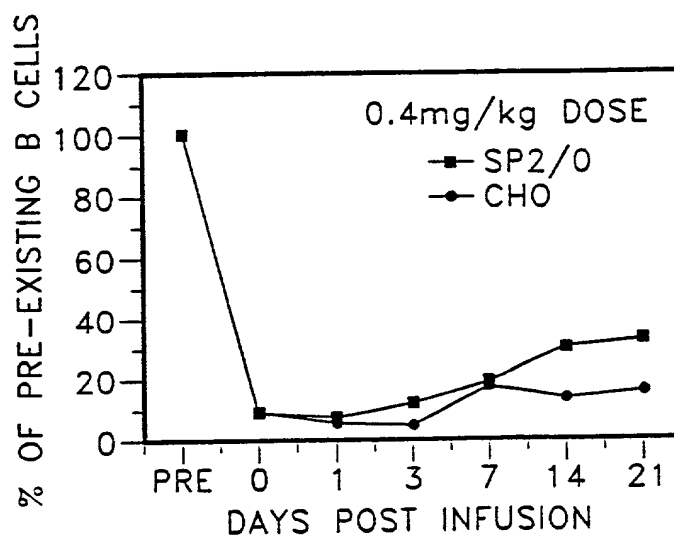
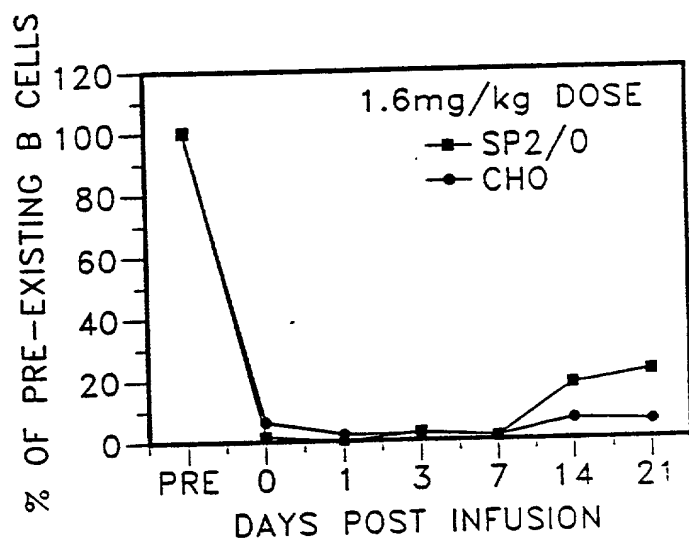
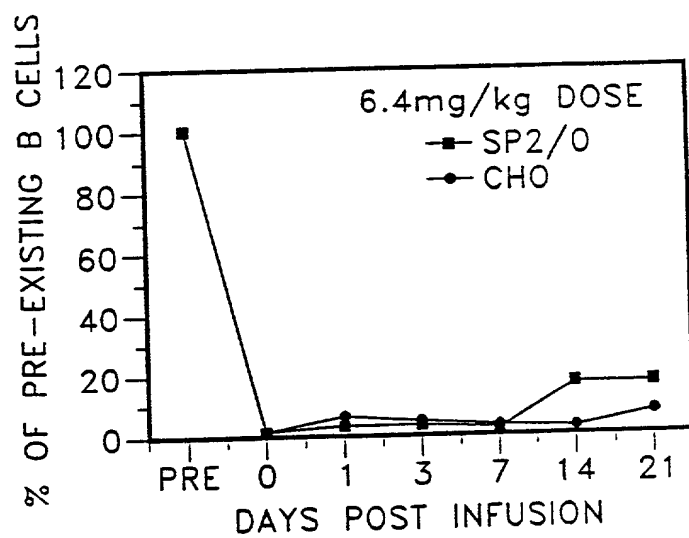
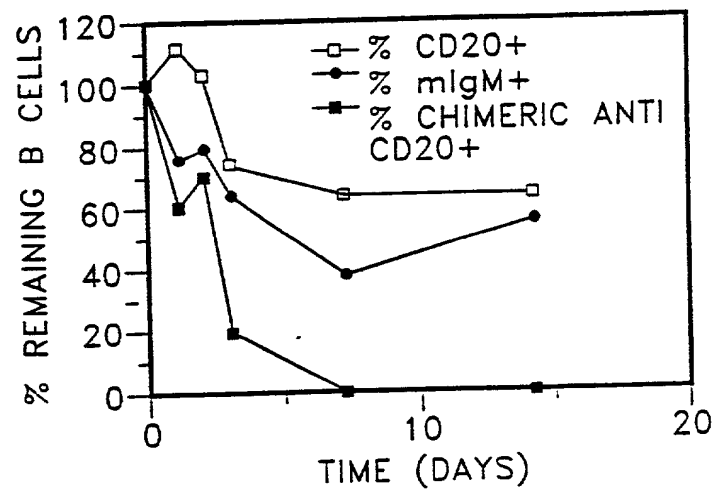
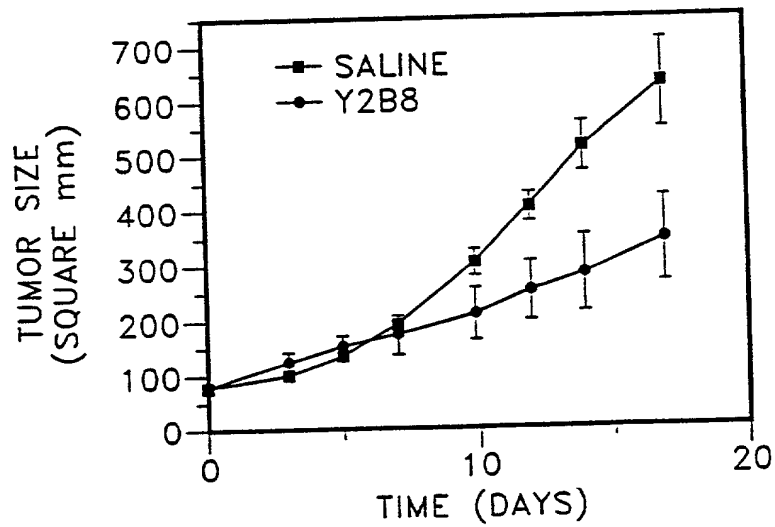


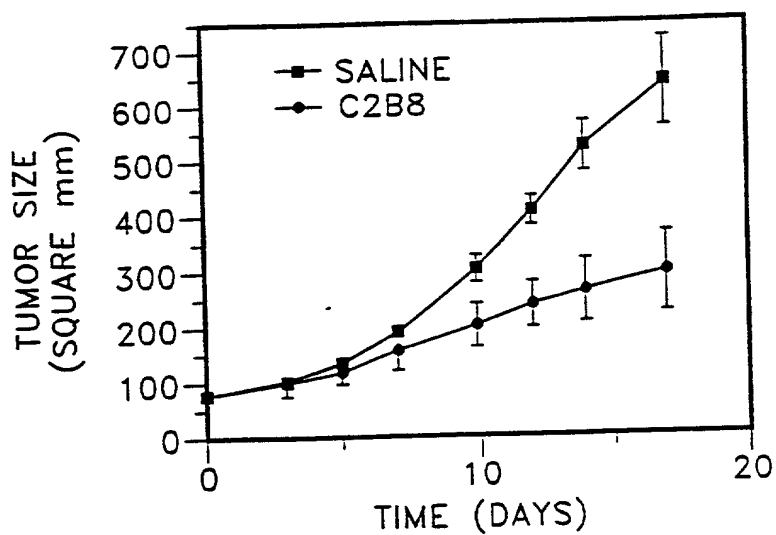
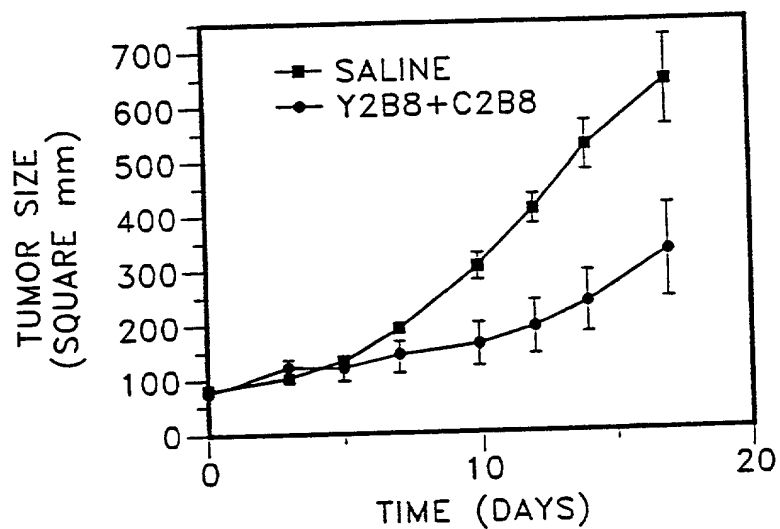
FIG. 7

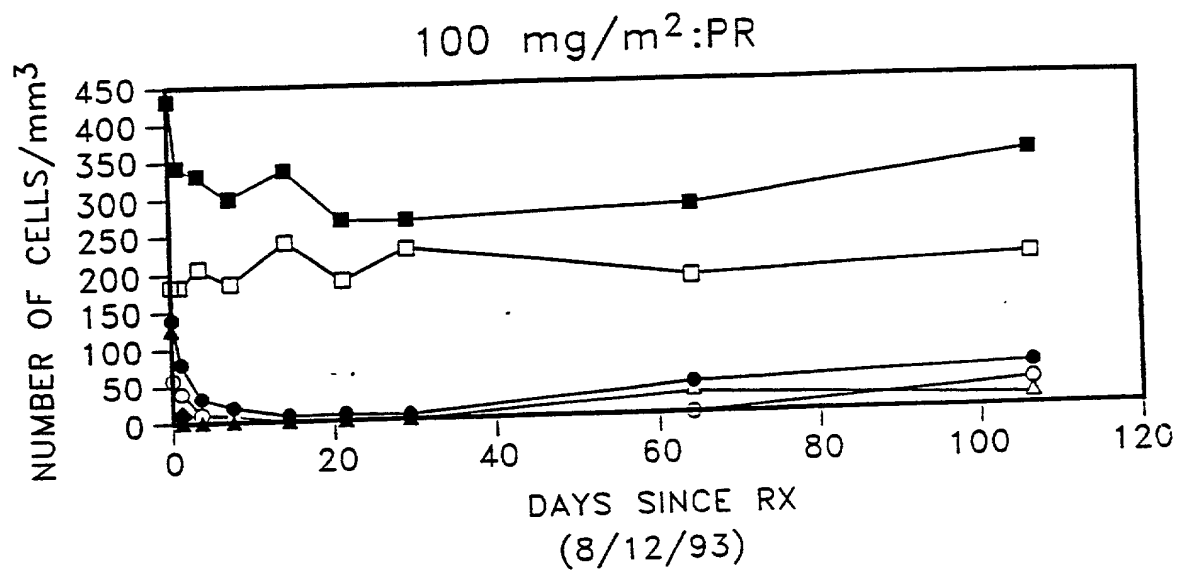
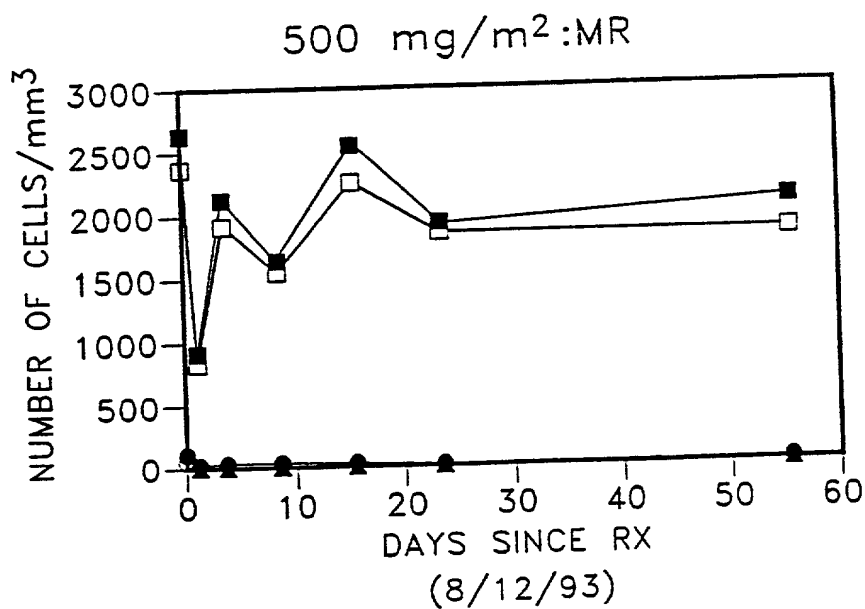


*FIG. 8**FIG. 9A*

*FIG. 9B**FIG. 9C*

*FIG. 10**FIG. 11*

*FIG. 12**FIG. 13*

*FIG. 14A**FIG. 14B*